

FAA Technical Center Atlantic City Airport

Absecon, New Jersey
Region 2
NJ9690510020

Site Exposure Potential

The Federal Aviation Administration (FAA) Technical Center site covers 2,023 hectares and is approximately 13 km northwest of Atlantic City in southeastern New Jersey (Figure 1). There are several major installations on the site, including the Atlantic City International Airport, New Jersey Air National Guard, and the National Aviation Facilities Experimental Center (NAFEC). The site was constructed as a naval air station in 1942. The NAFEC was added in 1957, and administration of all facilities was transferred to the FAA in 1958. Activities on the site have involved use and storage of toxic materials, including jet fuels, solvents, pesticides, and photo-processing chemicals. Improper storage, handling, and disposal practices contributed to contamination of on-site groundwater and soils (TRC 1988).

The FAA site is within the Absecon Creek drainage area. Both the north and south branches of Doughty's Mill Stream flow across the site into the Atlantic City Reservoir, formed by damming the south branch of the stream. This reservoir flows into another reservoir off the site, eventually becoming Absecon Creek, which discharges to Absecon Bay approximately 4 km downstream of the outlet of the lower Atlantic City reservoir.

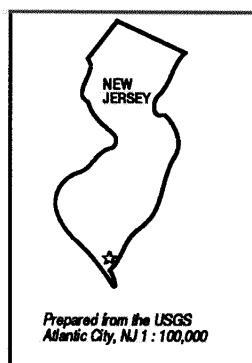
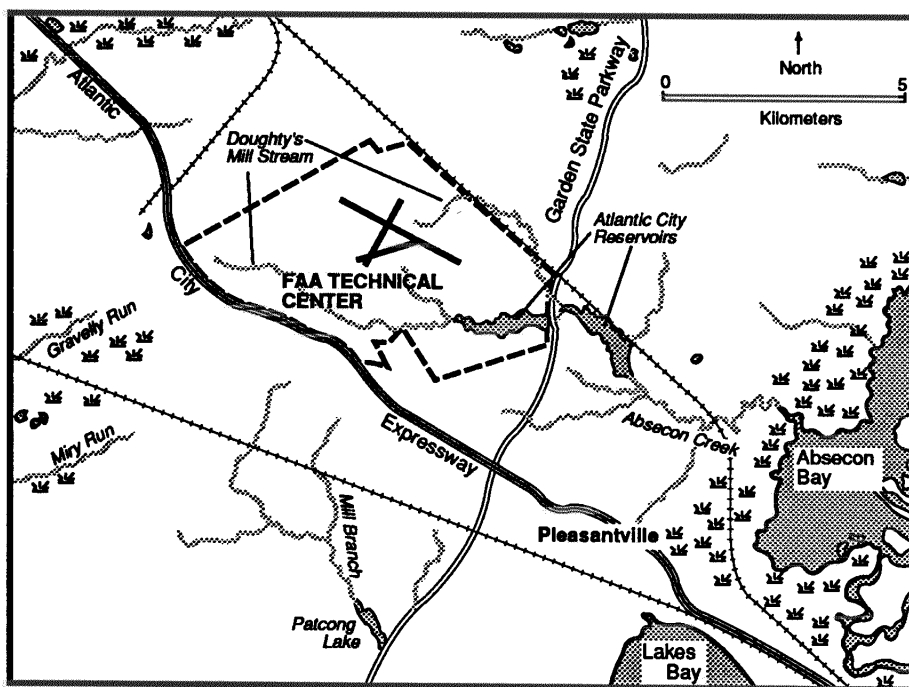


Figure 1.
The FAA
Technical Center
Atlantic City
Airport, Absecon,
New Jersey.



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Site Exposure Potential, *cont.*

The water table in the area of the FAA site is extremely shallow and may be within 1 m of the surface at different times of the year. The water table lies within a sand aquifer that is defined by a deeper, discontinuous clay layer. Groundwater typically follows topographical features, with the majority of the groundwater flowing towards the streams or reservoirs (TRC 1988).

Based on site characteristics and historical practices, surface water transport is considered a major pathway of contamination to NOAA resources. Groundwater in the shallow aquifer may contribute some contaminants as it enters the surface drainages. Contaminated sediments and soils represent secondary sources of contamination and may be transported off-site.

Site-Related Contamination

During an investigation of groundwater quality in Atlantic City municipal wells, Weston (1984) identified five major areas on the FAA site that may have contributed contaminants to the Atlantic City municipal water supply. A remedial investigation/feasibility study (RI/FS) was conducted at the five sites to characterize the type and extent of contamination at the FAA Technical Center. Preliminary sampling of surface water, groundwater, soils, and sediments was also conducted at 17 additional sites.

Results from the RI/FS report (TRC 1988) indicated that most matrices were contaminated with inorganic substances, PCBs, and DDT. The maximum concentrations of contaminants that were observed are summarized in Table 1, along with applicable screening levels (TRC 1988).

Levels of contamination varied among the sites investigated. Trace elements, found in most groundwater samples, were more than ten times the AWQC for the protection of aquatic life. The highest concentrations of copper and zinc occurred in drinking water supply wells on-site. Trace element levels in soils often exceeded average levels found in uncontaminated soils in the United States. The concentrations of the trace elements in sediments were compared to Effective Range-Low (ER-L) values of Long and Morgan (1990). Only lead and mercury in sediments exceeded their ER-L values.

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Site-Related Contamination, *cont.*

Table 1.
Maximum concentrations of contaminants of concern at the FAA Technical Center.

	Water			Soil		Sediment	
	Ground-water µg/l	Surface Water µg/l	AWQC ¹ µg/l	Surface Soil mg/kg	Average ² U.S. Soil mg/kg	Sediment mg/kg	ER-L ³ mg/kg
INORGANIC SUBSTANCES							
cadmium	40	ND	1.1+	4.2	0.06	1.7	5
chromium	406	ND	11	21	100	16.5	80
copper	227	ND	12+	30.9	30	14	70
lead	204	11.7	3.2+	99	10	45.1	35
mercury	3.2	ND	0.012	0.3	0.03	2.2	0.15
zinc	4190	35	110+	75	50	33.8	120
ORGANIC COMPOUNDS							
DDT	0.9	0.15	0.001	56	NA	0.16	0.001
PCBs	0.83	ND	0.014	49	NA	1.04	0.05
TPH ⁴	8000	ND	NA	43900	NA	ND	NA
ethyl-benzene	1,800,000	ND	^a 32000	0.16	NA	ND	NA
benzene	1,800,000	ND	^a 5300	0.16	NA	0.067	NA
toluene	6,000,000	ND	^a 17500	0.15	NA	ND	NA
¹ : Ambient water quality criteria for the protection of aquatic organisms. Freshwater chronic criteria presented (EPA, 1986) ² : Lindsay (1979). ³ : Effective range-low; the concentration representing the lowest 10 percentile value for the data in which effects were observed or predicted in studies compiled by Long and Morgan (1990). ⁴ : Total Petroleum Hydrocarbons + Hardness-dependent criteria; 100 mg/l CaCO ₃ used. ^a Freshwater acute criteria, no chronic criteria available NA Screening level not available ND Not detected at method detection limit							

In areas where jet fuels were stored or burned, soils and ground-water had elevated concentrations of volatile organic compounds. Several of these sites were near surface drainages and there was some evidence that fuel had migrated to the adjacent surface water.

PCBs were detected at high concentrations in groundwater, soils, and sediments. The highest concentrations were measured in soil samples from the salvage yard and the transformer storage area. DDT was detected in all media sampled, including surface waters draining areas of the FAA site. DDT concentrations in soils were high at three of the five major sites.

Surface water and sediment samples were taken largely from the south branch of Mill Stream with a few samples from the north branch. No sampling was done in the Atlantic City reservoirs, so it is not known if contamination is migrating below the reservoirs into Absecon Creek.

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NOAA Trust Habitats and Species

Anadromous and marine species use the tidally influenced portion of Absecon Creek up to the impassable dam at the base of the Lower Atlantic City Reservoir (Table 2; Boriek personal communication 1990; McClain personal communication 1990). There was once a spawning ground for alewife near the base of the dam, but studies in the early 1970s found no evidence of spawning fish (Boriek personal communication 1990). Anadromous species may also be able to access Jarrets Run or the unnamed stream southeast of the site (TRC 1988). The New Jersey Department of Fish, Game, and Wildlife has no restoration plans that would allow anadromous species access to areas above the dam.

Table 2.
Species and
habitat use in
the tidally
influenced
portion of
Absecon Creek
up to the lower
Atlantic City
Reservoir dam.

Species		Habitat		Adult Forage
Common Name	Scientific Name	Spawning	Nursery	
ANADROMOUS/CATADROMOUS FISH				
blueback herring	<i>Alosa aestivalis</i>			◆
alewife	<i>Alosa pseudoharengus</i>			◆
American shad	<i>Alosa sapidissima</i>			◆
American eel	<i>Anguilla rostrata</i>			◆
striped bass	<i>Morone saxatilis</i>			◆
ESTUARINE/MARINE				
<u>Fish</u>				
Atlantic menhaden	<i>Brevoortia tyrannus</i>			◆
mummichog	<i>Fundulus heteroclitus</i>	◆	◆	◆
striped killifish	<i>Fundulus majalis</i>	◆	◆	
spot	<i>Leiostomus xanthurus</i>			◆
white perch	<i>Morone americana</i>	◆	◆	◆
bluefish	<i>Pomatomus saltatrix</i>			◆
<u>Invertebrates</u>				
blue crab	<i>Callinectes sapidus</i>		◆	◆

A number of marine and estuarine species use the lower portions of Absecon Creek for foraging, including blue crab. Menhaden, alewife, herring, and spot are fished commercially along the coast. Bluefish are an important offshore recreational fishery.

References

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Lindsay, W.L. 1979. Chemical Equilibria in Soils. New York: John Wiley & Sons. 449pp.

Long, E.R., and L.G. Morgan. 1990. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. Seattle: Coastal and Estuarine Assessment Branch, NOAA. NOAA Technical Memorandum NOS OMA-52. 175 pp.+ Appendices.

McClain, J., New Jersey Bureau of Marine Fisheries, Division of Fish, Game, and Wildlife, Atlantic City, New Jersey, personal communication, June 26, 1990.

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